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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included.

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TECHNICAL REPORT
ON
STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY
FOR
SALESPERSON, GENERAL (ret. tr.) 1-75.71
B-553 S-276
(Supersedes P-1)

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U. S. Employment Service
in Cooperation with
Pennsylvania and Michigan State Employment Services

October 1963

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STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

SALESPERSON, GENERAL (ret. tr.) 1-75.71

B-553

(Supersedes B-1)

Summary

The General Aptitude Test Battery was administered to a final sample of 96 workers employed as Salesperson, General 1-75.71 by five companies located in Pennsylvania and Michigan. The criterion consisted of supervisory ratings. On the basis of mean scores, standard deviations, correlations with the criterion, job analysis data, and their combined selective efficiency, Aptitudes G-Intelligence, N-Numerical Aptitude and Q-Clerical Perception were selected for inclusion in the final test norms.

GATB Norms for Salesperson, General 1-75.71, B-553.

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
G	CB-1-II	90	G	Part 3	85
	CB-1-I			Part 4	
	CB-1-J			Part 6	
N	CB-1-D	90	N	Part 2	85
	CB-1-I			Part 6	
Q	CB-1-B	85	Q	Part 1	85

Effectiveness of Norms

The data in Table IV indicate that only 62 percent of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the above norms, 74 percent would have been good workers. 38 percent of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the above norms, only 26 percent would have been poor workers.

TECHNICAL REPORT

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Salesperson, General 1-75.71.

II. Sample

The experimental sample of 96 individuals was drawn from two samples of workers employed in the occupation of Salesperson, General 1-75.71.

Sample I - Michigan - During the period May 12-29, 1952, the GATB, B-1001, was administered to 41 workers (7 men and 34 women) employed as Salesperson, General 1-75.71 at Sears Roebuck Company, Pontiac, Michigan. All employees available on the days of testing were included in the study. One month is considered by the company as the training period. New employees are selected on the basis of a personal interview and past sales experience.

TABLE I-A

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

N = 41	M	σ	Range	r
Age (years)	38.2	8.0	22-57	-.131
Education (years)	10.7	1.4	8-12	.217
Experience (months)	36.9	26.8	6-108	.027

Sample II - Pennsylvania - During the period April 15, 1958 to March 11, 1959, the GATB, B-1002A, was administered to 55 women employed as Salesperson, General 1-75.71 at four department stores in Pennsylvania. No previous experience is required for employment. The training period is considered to be 2 months. None of the workers tested were considered trainees. The names of the department stores, their location, and the number of workers in the sample at each are as follows:

<u>Company</u>	<u>Location</u>	<u>Number</u>
Lazarus Department Store	Wilkes-Barre	4
Boston Department Store	Wilkes-Barre	8
Laubach's Department Store	Easton	16
C. K. Whitner's	Reading	27
		<u>55</u>

TABLE I-B

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

N = 55	M	σ	Range	r
Age (years)	38.9	11.3	18-59	.003
Education (years)	11.3	1.9	8-16	.074
Experience (months)	47.7	46.3	1-216	.185

III. Job Description

Job Title: Salesperson, General (ret. tr.) 1-75.71

Job Summary: Displays, explains, and sells merchandise to customer in department store or in retail division of mail-order house. Displays merchandise and assists customer in making selection by offering suggestions and explanations. Writes out sales slip or fills out sales contract for customer's signature, receives payment or secures credit authorization, and gives wrapped article to customer or arranges for its delivery. Performs related duties such as handling ordinary merchandise exchanges, caring for stock on sales floor and taking periodic inventories. Generally specializes in one commodity or closely related commodities. May be designated according to merchandise sold as salesperson, linens; salesperson, radios; or salesperson, toys.

Work Performed: At the beginning of each day, dusts counter, uncovers merchandise and arranges it attractively on counter. Receives cash allotment from cashier and places it in cash register drawer.

Greets customers courteously and determines merchandise desired. May assist customer in making selection, using various techniques to promote sales, such as suggesting extra items to customers, emphasizing the selling point of the merchandise. May keep a record of customer item request and notify customer when new stock is received in order to increase sales.

Records sales transactions by writing out sales slips for all types of sales, designating the merchandise, price and, in case of a charge, the customer's name and address. Receives payment or secures credit authorization, wraps merchandise, and gives it to customer.

In cash sales, rings up sale on cash register, mentally calculates amount of change due, and counts out change to customer. In some departments, may give the article to a cashier-wrapper to complete the sales transaction.

Keeps a record of stock on hand and notifies the Department Head whenever additional stock is needed. Keeps a daily tally of all sales transactions.

IV. Experimental Battery

All the tests of the GATB, B-1002A, were administered to the Pennsylvania sample, and all tests of the GATB, B-1001 except Part E, were administered to the Michigan sample.

V. Criterion

Sample I - Michigan - All the employees were assigned rank-order ratings independently by two supervisors, the personnel Director and the Operating Superintendent. These ratings were converted to linear scores and averaged for each employee to obtain the final criterion distribution.

Sample II - Pennsylvania - The criterion data collected consisted of supervisory ratings on USES Form SP-21, "Descriptive Rating Scale." These data were obtained in June 1958 and January - March 1959. The rating scale consisted of nine items covering different aspects of job performance, with five alternatives for each item. Weights of one through five, indicating the degree of job proficiency attained, were assigned to the alternatives. The distribution of final criterion scores ranged from 21-44 with a mean of 33.8 and a standard deviation of 6.6.

VI. Qualitative and Quantitative Analyses

A. Qualitative Analysis:

On the basis of the job analysis data, the following aptitudes were rated "important" for success in this occupation:

Intelligence (G) - required to understand selling features of merchandise, make suggestions to customers, and understand and apply sales training.

Verbal Aptitude (V) - required to talk to customer in understandable manner regarding products for sale.

Numerical Aptitude (N) - required to determine cash value of each sale, taxes, and change due the customer.

Clerical Perception (O) - required to make out sales slips, take inventories, and in checking merchandise.

B. Quantitative Analysis:

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB, B-1002

Aptitude	Pennsylvania Sample N = 55			Michigan Sample N = 41		
	M	σ	r	M	σ	r
G	97.7	16.1	.417**	103.0	16.0	.309*
V	100.5	15.4	.375**	100.0	15.0	.219
N	99.1	15.9	.306*	106.0	16.0	.349*
S	93.8	18.7	.351**	98.0	16.0	.051
P	98.4	19.4	.224	95.0	14.0	.339*
O	108.0	17.8	.187	95.0	12.0	.437**
K	110.2	18.6	-.044	96.0	19.0	.333*
F	96.6	23.1	.081	98.0	19.0	.349*
M	98.7	22.7	-.046	93.0	18.0	.003

*Significant at the .05 level.

**Significant at the .01 level.

C. Selection of Test Norms:

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes									
	G	V	N	S	P	O	K	F	M	
Job Analysis Data										
Important	X	X	X			X				
Irrelevant										
Relatively High Mean (N = 96)			X			X	X			
Relatively Low Sigma (N = 96)										
Significant Correlation with Pennsylvania Criterion	X	X	X	X						
Significant Correlation with Michigan Criterion	X		X		X	X	X	X		
Aptitudes to be Considered for Trial Norms	G	V	N	S	P	O	K	F		

Trial norms consisting of various combinations of Aptitudes G, V, N, S, P, O, K and F with appropriate cutting scores were evaluated against the criterion by means of the Phi Coefficient technique. A comparison of the results showed that B-1002 norms consisting of G-85, N-85 and O-85 had the best selective efficiency.

VII. Validity of Norms (concurrent)

The validity of the norms was determined by computing a Phi Coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 38 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV shows the relationship between test norms consisting of Aptitudes G, N and Q with critical scores of 85, 85 and 85 respectively, and the dichotomized criterion for Salesperson, General 1-75.71. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV

Validity of Test Norms for Salesperson, General 1-75.71
(G-85, N-85, Q-85)

N = 96	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	9	51	60
Poor Workers	18	18	36
Total	27	69	96

Phi Coefficient = .37
 $\chi^2 = 13.440$
 $P/2 < .0005$

The data in the above table indicate a significant relationship between the test norms and the criterion for the sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes G, N and Q with minimum scores of 85, 85 and 85, respectively, have been established as B-1002 norms for Salesperson, General 1-75.71. The equivalent B-1001 norms consist of G-90, N-90 and Q-85.

IX. Determination of Occupational Aptitude Pattern

The data for this study met the requirements for incorporating the occupation studied into OAP- 9 which is shown in Section II of the Guide to the Use of the General Aptitude Test Battery, January 1962.